

REMARKS

This Response is in reply to the Final Office Action mailed on June 28, 2004. Claims 1 and 6-19 remain pending in this application. No new matter has been added. Entry and consideration of following remarks is respectfully requested.

In the Claims

The Examiner rejected Claims 1 and 6-19 under 35 USC §103(a) as being unpatentable over Chisum (5,341,575) in view of Ham (5,343,628), Venalainen (5,634,368) and Weidmann et al.(Patent 5,848,477). The Applicant respectfully traverses these rejections for the reasons stated below.

Applicant's invention, as defined by the present claims, relates to a measurement apparatus for vehicle body alignment work, which measurement apparatus includes a ball-hole joint between the parts 41 and 42. The holes are situated in different angular positions, so that the part 42 can be turned into different angular positions. In a corresponding manner, there is a ball-hole joint between the parts 42 and 43 in different length positions of the part 43 and, in addition in different angular positions between the parts 42 and 43. The final measurement information is obtained as a combination of the measurement data C1, C2, C3 and C4 as well as C5.

Chisum describes a device in which measurement takes place linearly by moving a measurement head. Chisum does not teach measuring having access behind an obstacle, underneath or above during the measurement operation. There is no access behind obstacles to perform measurement as in the Applicant's invention.

Ham represents a conventional art measurement method that is based on symmetry of a car. 3-dimensional (3-D) measurement information is not obtained in the

measurement process. It is only possible to compare the damaged side of the car with the side of the car that is not damaged and thus make the necessary repairs. As is clear from the figure, the arm cannot be locked, but instead is turns freely around its articulation point in the horizontal direction. The rod part situated at the end also cannot perform measurement except in one vertical direction. The turning of the arm part in accordance with the present invention, which would allow measurement points situated underneath to be read, has not been provided. Ham describes the state of the art over which our invention offers a clear improvement.

Venalainen does not describe any device arrangement based on measurement. The reference only teaches a method of attaching a car to an alignment table. Therefore, the reference is not relevant because it does not at all teach or suggest a measuring process.

Wiedmann describes a 3-D measurement device comprising a measurement head and is intended for workshops. Wiedmann does not disclose a structure in which a turnable arm part is connected to a measurement arm, wherein turnable arm part can additionally be turned into different angular positions and placed in different longitudinal positions. It is an important aspect of the present invention that the pivoting and turning positions are locking positions.

In the Applicants' invention, the measurement apparatus makes it possible to make measurements that are not by any means possible to make by the devices of Chisum, Ham or Weidmann. The measurements are made possible specifically by the joint arrangement, in accordance with which the arm parts 42 and 43 can be turned to an angular position, for example to 90 degrees as shown in picture L1 which accompanies this response. The measurement apparatus allows access to behind an obstacle during the measurement operation, also shown in picture L1. Thus, it is possible to read from the

car body points which would have been impossible to read by any of the prior art references.

In the present invention, turning around the longitudinal axis of the arm part 43 additionally makes it possible to arrange the measurement head 65 to measure car parts situated underneath (See picture L2a) or car parts situated above (See picture L2b). The prior art references do not teach or suggest this feature. As shown in picture L1, the measurement head thus has access to behind the obstacle and from this location.

Also, because the measurement head is not located in the same line as the measurement arm, makes it possible that the measurement arm 40 is not in the way of the alignment work where pulling and measurement are performed at the same time to pull out a point damaged in a crash, for example, a window frame to a right coordinate point. In the prior references, the measurement arm and the measurement head situated in the same line at its end make it difficult to perform measurement during alignment pulling.

The measurement head also makes it readily possible to read points situated on the sides of the car, as shown in picture L3, and to repair the points by keeping the measurement head in place by performing a repair pull. Therefore, the measurement arm does not hamper the repair operation.

In the present invention, a precise measurement point is achieved for the measurement head such that the positions of the different arms of the measurement device are accurately locked and determined by means of the ball-groove/spring coupling. In particular, the turning and pivoting of the measurement arm and different locking positions in both of them are essential to the device. Therefore, the position of the measurement arm at each particular moment can be seen in connection with the articulation points and the arms of the device. The number of locking positions A1, A2...and so on is limited and a given code corresponds to each position. When the

measurement head is in place in a measurement point, the codes are read and fed to a computer that computes a 3-D coordinate. This makes it possible to read the exact 3-D position of the measurement point as a combination of coordinates (A1, A2....).

The Applicant submits that there is absolutely no teaching or suggestion in Chisum that would lead one to combine the teachings of that reference with Ham, Venalainen and Wiedmann. Accordingly, absent some motivation, one of ordinary skill in the art would not combine the invention of Chisum with the teachings of Ham, Venalainen and Wiedmann. Furthermore, The Applicant submits that even if the four references were combined, the result would not be the present invention.

None of the prior art references cited by the Examiner discloses a corresponding combination and, moreover, the ball-hole joint enables the difference positions to be accomplished. In view of the above, it is submitted that the Chisum combined with the teachings of Ham, Venalainen and Wiedmann references fail to render the claimed invention obvious. Therefore, withdrawal of the Examiner's rejections under §§103(a) is respectfully requested.

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Conclusion

In view of the above remarks it is submitted that the Examiner's rejections have been overcome and the present application should now be in condition for allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

It is believed that the present amendment is being timely submitted. However, if it is determined that any fee is required for the entry of this amendment, the Commissioner is hereby authorised to charge said fee to Deposit Account No. 50-0518 in the name of Steinberg & Raskin, P.C.

An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,
STEINBERG & RASKIN, P.C.

By:

Dona C. Edwards

Reg. No. 42,507

Steinberg & Raskin, P.C.
1140 Avenue of the Americas
New York, New York 10036
(212) 768-3800